

**[0036]** Having thus described the invention, what is claimed is:

1. A crop-harvesting header arranged to be supported by the forward end of a tractor and comprising in combination:

a main frame of substantial width and having a front end and opposing rear end, an upper portion and an opposing lower portion, and opposing lateral sides;

a mechanism attachable to a tractor and connected to said main frame to support said main frame for vertical movement relative to the ground;

a sickle bar assembly including at least one sickle bar, said assembly supported by the lower portion of said frame and extending between said lateral sides thereof to cut a swath substantially as wide as said main frame;

a consolidating auger extending horizontally between said lateral sides of said main frame, said auger having oppositely spiraled helical flights extending inwardly from opposite ends thereof and a central axial shaft about which said auger rotates;

an arcuate shield adjacent the lower and rearward portions of said auger to guide cut and consolidated crop material rearwardly; and

a modular wobble drive removably affixed to one of said lateral sides and said at least one sickle bar and comprising:

an open housing having a first opening therethrough with a first pair of precision machined bearing shoulders on each side of said first opening;

a bent-axis wobble shaft extending through said first opening and supported therein by a first pair of precision bearings, one fitted within each of said first pair of precision machined bearing shoulders, said bent-axis wobble shaft having a first and a second shaft portion, each with a longitudinal axis, the two of which intersect but are not parallel;

a wobble hub having an elongate tube-shaped body with a central axis and a second pair of precision machined bearing shoulders paced apart along said central axis;

1           said second shaft portion of said bent-axis wobble shaft extending  
2 through said tube-shaped body of said wobble hub and supported therein by  
3 a second pair of precision bearings, one fitted within each of said second  
4 pair of precision machined bearing shoulders;

5           said tube-shaped body of said wobble hub further having a pair of  
6 opposing precision machined bearing surfaces protruding from the outer  
7 surface of said body;

8           a Y-shaped wobble yoke with the cupped portion fitting part way  
9 around said tube-shaped body of said wobble hub and movably supported  
10 thereto by a third pair of precision bearings, one affixed to each of said  
11 bearing surfaces, the leg portion supported by a single precision bearing  
12 affixed to said open housing;

13          said open housing, bent-axis wobble shaft, wobble hub and wobble  
14 yoke so arranged that rotation of said first portion of said bent-axis wobble  
15 shaft results in reciprocating movement of said leg portion of said wobble  
16 yoke.

1   2.     The crop-harvesting header of Claim 1, wherein:

2           said first and second pairs of precision bearings are tapered roller  
3 bearings.

1   3.     The crop-harvesting header of Claim 2, wherein:

2           said third pair of precision bearings are needle bearings.

1   4.     The crop-harvesting header of Claim 3, wherein:

2           Said sickle bar assembly includes two opposing sickle bars, each with its  
3 own modular wobble drive.

1 5. In a crop-harvesting header arranged to be supported by the forward end  
2 of a tractor, said header comprising:

3 a main frame of substantial width and having a front end and opposing  
4 rear end, an upper portion and an opposing lower portion, and opposing lateral  
5 sides;

6 a mechanism attachable to a tractor and connected to said main frame to  
7 support said main frame for vertical movement relative to the ground;

8 a sickle bar assembly including at least one sickle bar, said assembly  
9 supported by the lower portion of said frame and extending between said lateral  
10 sides thereof to cut a swath substantially as wide as said main frame;

11 a consolidating auger extending horizontally between said lateral sides of  
12 said main frame, said auger having oppositely spiraled helical flights extending  
13 inwardly from opposite ends thereof and a central axial shaft about which said  
14 auger rotates;

15 an arcuate shield adjacent the lower and rearward portions of said auger  
16 to guide cut and consolidated crop material rearwardly; and

17 a modular wobble drive removably affixed to one of said lateral sides and  
18 said at least one sickle bar, the improvement in said wobble drive comprising:

19 an open housing having a first opening therethrough with a first pair  
20 of precision machined bearing shoulders on each side of said first opening;

21 a bent-axis wobble shaft extending through said first opening and  
22 supported therein by a first pair of precision bearings, one fitted within each  
23 of said first pair of precision machined bearing shoulders, said bent-axis  
24 wobble shaft having a first and a second shaft portion, each with a  
25 longitudinal axis, the two of which intersect but are not parallel;

26 a wobble hub having an elongate tube-shaped body with a central  
27 axis and a second pair of precision machined bearing shoulders paced  
28 apart along said central axis;

29 said second shaft portion of said bent-axis wobble shaft extending  
30 through said tube-shaped body of said wobble hub and supported therein by

31 a second pair of precision bearings, one fitted within each of said second  
32 pair of precision machined bearing shoulders;  
33 said tube-shaped body of said wobble hub further having a pair of  
34 opposing precision machined bearing surfaces protruding from the outer  
35 surface of said body;  
36 a Y-shaped wobble yoke with the cupped portion fitting part way  
37 around said tube-shaped body of said wobble hub and movably supported  
38 thereto by a third pair of precision bearings, one affixed to each of said  
39 bearing surfaces, the leg portion supported by a single precision bearing  
40 affixed to said open housing;  
41 said open housing, bent-axis wobble shaft, wobble hub and wobble  
42 yoke so arranged that rotation of said first portion of said bent-axis wobble  
43 shaft results in reciprocating movement of said leg portion of said wobble  
44 yoke.  
45 .

1 8. The crop-harvesting header of Claim 7, wherein:  
2 said first and second pairs of precision bearings are tapered roller  
3 bearings.

1 9. The crop-harvesting header of Claim 8, wherein:  
2 said third pair of precision bearings are needle bearings.

1 10. The crop-harvesting header of Claim 9, wherein:  
2 Said sickle bar assembly includes two opposing sickle bars, each with its own  
3 modular wobble drive.

1 11. A modular wobble drive for a sickle bar crop harvesting mechanism,  
2 comprising:  
3

4 an open housing having a first opening therethrough with a first pair of  
5 precision machined bearing shoulders on each side of said first opening;  
6 a bent-axis wobble shaft extending through said first opening and  
7 supported therein by a first pair of precision bearings, one fitted within each of  
8 said first pair of precision machined bearing shoulders, said bent-axis wobble  
9 shaft having a first and a second shaft portion, each with a longitudinal axis, the  
10 two of which intersect but are not parallel;  
11 a wobble hub having an elongate tube-shaped body with a central axis  
12 and a second pair of precision machined bearing shoulders spaced apart along  
13 said central axis;  
14 said second shaft portion of said bent-axis wobble shaft extending through  
15 said tube-shaped body of said wobble hub and supported therein by a second  
16 pair of precision bearings, one fitted within each of said second pair of precision  
17 machined bearing shoulders;  
18 said tube-shaped body of said wobble hub further having a pair of  
19 opposing precision machined bearing surfaces protruding from the outer surface  
20 of said body;  
21 a Y-shaped wobble yoke with the cupped portion fitting part way around  
22 said tube-shaped body of said wobble hub and movably supported thereto by a  
23 third pair of precision bearings, one affixed to each of said bearing surfaces, the  
24 leg portion supported by a single precision bearing affixed to said open housing;  
25 said open housing, bent-axis wobble shaft, wobble hub and wobble yoke  
26 so arranged that rotation of said first portion of said bent-axis wobble shaft  
27 results in reciprocating movement of said leg portion of said wobble yoke.

1 12. The crop-harvesting header of Claim 11, wherein:

2 said first and second pairs of precision bearings are tapered roller  
3 bearings.

1 13. The crop-harvesting header of Claim 12, wherein:

2 said third pair of precision bearings are needle bearings.

- 1 14. The crop-harvesting header of Claim 13, wherein:  
2 said sickle bar assembly includes two opposing sickle bars, each with its  
3 own modular wobble drive.